a time at which a subframe is received from the serving cell base station **400** as a reference time to **420**. The processor **102** calculates a TDOA t_1 **430** between the reference time **420** and a time at which a subframe is received from the neighbor cell A base station **400***a*. The processor **102** calculates a TDOA t_2 **440** between the reference time **420** and a time at which a subframe is received from the neighbor cell B base station **400***b*. The processor **102** calculates a TDOA t_3 **450** between the reference time **420** and a time at which a subframe is received from the neighbor cell C base station **400***c*. The processor **102** calculates a first arrival path (FAP) for the received subframe to measure a TDOA. The processor **102** measures the TDOA based on the calculated FAP. The TDOA may include a time difference between at least one of the CRS, the PRS, and the synchronization signal received by the transceiver **101** from the respective base stations **400**, **400***a*, **400***b*, and **400***c*.

[0053] According to an embodiment of the present disclosure, when measuring the TDOA, the processor **102** measures the TDOA based on any one signal (e.g., the CRS) that is designated in advance among a plurality of signals received from the plurality of base stations **400**, **400***a*, **400***b*, and **400***c*. If the PRS is received during measurement of the TDOA based on any one signal (e.g., the CRS) that is designated in advance, the processor **102** may measure the TDOA based on the PRS. If the PRS is received during measurement of the TDOA based on any one signal (e.g., the CRS) that is designated in advance, the processor **102** may measure the TDOA based on the signal designated in advance and the PRS. Alternatively, as described in FIGS. **5** and **6**, the processor **102** may measure the TDOA based on a signal obtained by combining the PRS with the CRS (FIG. **5**) or by combining the PRS with the synchronization signal (FIG. **6**). More specifically, the PRS and the CRS may be included in a subframe as described in FIG. **5** and the TDOA may be measured based on a signal comprising the subframe including the PRS and the CRS. Otherwise, the PRS and the synchronization signal, which may comprise the PSS and the SSS. may be in included in a subframe as described in FIG. **6** and the TDOA may be measured based on a signal comprising the subframe including the PRS and the synchronization signal. In this case, the processor **102** measures the TDOA based on respective signals or one of them included in the obtained signal. Embodiments of the present disclosure provide examples of ways to measure the TDOA, and the present disclosure is not limited to these embodiments. Although three cells are illustrated as neighbor cells in FIG. **4**, the present disclosure is not limited by the configuration of FIG. **4**.

[0054] The processor **102** controls the transceiver **101** to transmit information about the respective measured TDOAs to a location server **460**. The processor **102** may control the transceiver **101** to transmit the respective measured TDOAs to the location server **460**. The processor **102** may control the transceiver **101** to transmit only some of the measured TDOAs to the location server **460**. For example, the transceiver **101** may transmit measured TDOAs for some cells (e.g., cells having received power strengths exceeding a preset threshold value) determined according to a strength of received power (e.g., a reference signal received power (RSRP), a received signal strength indication (RSSI), or a reference signal received quality (RSRQ)) measured based on the received CRS.

[0055] According to an embodiment of the present disclosure, the location server **460** estimates a location of a UE **410** based on the TDOA information transmitted from the UE **410**. The location server **460** may estimate the location of the UE **410** based on one of a TDOA measured based on the CRS, a TDOA measured based on the PRS, and a TDOA measured based on the synchronization signal according to preset priorities. If measured TDOAs according a plurality of signal types are received, the location server **460** measures a location of the UE **410** by using an average value of the TDOAs. For example, if the location server **460** receives both a TDOA t_1 between the serving cell and the neighbor cell A measured based on the CRS, and a TDOA $t_{1'}$ between the serving cell and the neighbor cell A measured based on the PRS, the location server **460** estimates the location of the UE **410** based on an average value (that is, $(t_1+t_{1'})/2$) of the TDOA t_1 and the TDOA $t_{1'}$. Embodiments provide examples of ways to estimate the location of the UE **410** by the location server **420**, and it would be obvious to those of ordinary skill in the art that the present disclosure is not limited thereto.

[0056] As described above, by estimating the location of the UE **410** based on various signals, such as a CRS and a synchronization signal having shorter transmission periods than that of a PRS, the location of the UE **410** may be estimated a greater number of times than with conventional techniques, thereby performing location estimation with enhanced reliability or accuracy.

[0057] The processor **102** controls the transceiver **101** to receive device control information based on the estimated current location of the UE **410**, e.g., information about priorities for processing signals sent from the neighbor base stations **400***a*, **400***b*, and **400***c*, from the serving cell base station **400**. According to an embodiment of the present disclosure, through enhanced reliability or accuracy location estimation, an error between a current location value of the UE **410** known to the base station **400** and an actual location value of the UE **410** may be reduced, such that device control information accurately reflecting the real location of the UE **410** may be provided to the UE **410**. If the priorities are designated in advance, the priorities may be changed by, for example, the serving cell base station **400**, according to the estimated location of the UE **410** and uplink control information (UCI) transmitted by the UE **410** to the serving cell base station **400**.

[0058] Herein, the CRS, the PRS, and the synchronization signal have been described as examples for estimating locations of the UEs **110** and **410**. However, various other signals that are sent from base stations (e.g., the base stations **400**, **400***a*, **400***b*, and **400***c*) may be used in addition to or in place of the CRS and the synchronization signal.

[0059] FIG. **7** is a flowchart illustrating a method for controlling the communication device, according to an embodiment of the present disclosure.

[0060] Referring to FIG. **7**, the communication device receives subframes from a serving cell and a plurality of neighbor cells, in step **700**.

[0061] The communication device measures TDOAs of the respective subframes received from the plurality of neighbor cells based on a TOA of the subframe received from the serving cell, in step **710**.

[0062] The communication device transmits at least one of the measured TDOAs to a location server, in step **720**.